

Table 2 – Feasibility Study Outline Cross-Walk

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LWG FS Outline	Associated LWG Appendix	EPA FS Outline
Executive Summary		Executive Summary
1. Introduction		1. Introduction
1.1 EPA FS Guidance and Principles		1. Introduction
1.2 Draft FS Document Organization		1.1 Purpose and Organization of Report
		1.2 Background Information
2. Site Description		1.2.1 Site Description
2.1 Physical Description	2.1.1 – <u>Appendix La</u> : Sediment Transport Modeling	1.2.1 Site Description (Also see the RI Report and FS Section 2.4.1 – Identification and Screening of Technologies)
2.1.1 Hydrology	2.1.2 – <u>Appendix La</u>	
2.1.2 Riverbed Characteristics	2.1.4 – <u>Appendix Ha</u> : Fate and Transport Modeling	
2.1.3 Debris		
2.1.4 Hydrogeology		
2.2 Chemical System	2.2.5 – <u>Appendix A</u> : Background Level Development Feasibility Study; <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis	1.2.3 Nature and Extent of Contamination
2.2.1 Sediment		
2.2.2 Surface Water		
2.2.3 Transition Zone Water		
2.2.4 Biota		
2.2.5 Background Concentrations in Sediments and Surface Water		
2.3 Biological and Habitat Description	2.3 – <u>Appendix M</u> : Preliminary Draft Clean Water Act Section 404(B)(1) Evaluation	1.2.1 Site History (Also see Appendix – 404Evaluation, and Appendix – Biological Assessment)
2.3.1 Biological Communities	2.3.1 – <u>Appendix M</u>	
2.3.2 Habitat Types	2.3.2 – <u>Appendix M</u>	
2.4 Site Uses	2.4.2 – <u>Appendix M</u> : Preliminary Draft Clean Water Act Section 404(B)(1) Evaluation	1.2.2 Site History
2.4.1 Historical and Current Site Use and Ownership		
2.4.2 Shoreline Conditions and Structures		
2.4.3 Vessel Traffic Pattern		
2.4.4 Current and Future Navigation Requirements		
2.4.5 Maintenance Dredging History and Status		

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2.4.6 Environmental Dredging and Capping History 2.4.7 Potential Habitat Restoration Sites		
2.5 Sources and Source Control Status 2.5.1 Source Control Inventory 2.5.2 Summary Review of Current Known Source Types and Status	2.5 - <u>Appendix Ha</u> : Fate and Transport Modeling 2.5.1 – <u>Appendix Q</u> : Source Control Inventory Tables 2.5.2 – <u>Appendix Q</u> : <u>Appendix Ha</u> ; <u>Appendix C</u> : Water Screening Against Potential ARARs and Selection of Indicator Chemicals for Draft FS Evaluation; <u>Appendix Hc</u> – Capping Effectiveness and Stability Modeling Draft	1.2.1 Site History 1.2.2.2 Upland Source Control Measures
2.6 Conceptual Site Model 2.6.1 Physical Setting 2.6.2 Chemical Distribution 2.6.3 Sources, Fate, and Transport 2.6.4 Current and Likely Future Risk	2.6.3 - <u>Appendix Ha</u> : Fate and Transport Modeling; <u>Appendix A</u> : Background Level Development Feasibility Study; <u>Appendix Hb</u> : Documentation for the Dynamic Bioaccumulation Model Draft	1.2.3 Nature and Extent of Contamination 1.2.4 Contaminant Fate and Transport 1.2.5 Baseline Risk Assessment (Also see the RI Report)
2.7 Description and Status of Other Portland Harbor Remedial Action or Removal Orders 2.7.1 Terminal 4 2.7.2 Gasco and Siltronic 2.7.3 Arkema		1.2.2.3 Early Action Sites
2.8 Description of FS Database 2.8.1 Consistency of Datasets with Sites under Separate Orders	2.8 – <u>Appendix R</u> : Sediment Database Description	To be added to Section 1 Appendix: Sediment Database Description
2.9 Site Segmentation for Draft FS Purposes	2.9 – <u>Appendix La</u> : Sediment Transport Modeling	3.3 SDUs (Sediment Decision Units) 3.4 SMAs (Sediment Management Areas)

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2.10 Conclusions		-- Excess (not used)
3. Refined Remedial Action Objectives and Remedial Goals	3. – <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis	2.1 Introduction
3.1 Contaminants Potentially Posing Unacceptable Risk and Risk Assessment 3.1.1 Human Health Risk Management Recommendations and Identification of COCs 3.1.2 Ecological Risk Management Recommendations and Identification of COCs 3.1.3 Identification of Additional Contaminants for Consideration in the Draft FS	3.1 – <u>Appendix O</u> : EPA Comments on the Draft FS Process, LWG Responses, and Resolutions 3.1.2 – <u>Appendix P</u> : Comprehensive Benthic Approach 3.1.3 – <u>Appendix C</u> : Water Screening Against Potential ARARs and Selection of Indicator Chemicals for Draft FS Evaluation	2.2.1 Contaminants of Concern 2.2.2 Risk-Based PRGs Appendix A – Derivation of Risk-Based PRGs Appendix B – Food Web Model
3.2 Review of RAOs and Additional RAO Considerations 3.2.1 RAO Considerations 3.2.2 Attainment of RAOs	3.2 – <u>Appendix B</u> : EPA September 30, 2009 Remedial Action Objectives (RAOs) Letter 3.2.1 – <u>Appendix Da</u> : Remediation Goal Development 3.2.2 – <u>Appendix T</u> : Long-Term Monitoring and Contingency Program Outline	2.2 Remedial Action Objectives
3.3 Review of Additional Management Goals and Additional Considerations		2.2 Remedial Action Objectives
3.4 Applicable or Relevant and Appropriate Requirements (ARARs) 3.4.1 Portland Harbor ARARs 3.4.2 ARAR Waivers	3.4.1 – <u>Appendix C</u> : Water Screening Against Potential ARARs and Selection of Indicator Chemicals for Draft FS Evaluation; <u>Appendix M</u> : Preliminary Draft Clean Water Act Section 404(B)(1) Evaluation	2.2.3 ARARs
3.5 PRGs and Proposed PRGs 3.5.1 PRGs	3.5 – <u>Appendix Da</u> : Remediation Goal Development	2.2.4 Development of Preliminary Remediation Goals

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3.5.2 Focused PRGs 3.5.3 Remediation Goals (RGs) for the Draft FS	<u>Appendix C</u> : Water Screening Against Potential ARARs and Selection of Indicator Chemicals for Draft FS Evaluation 3.5.1 – <u>Appendix Da</u> : <u>Appendix A</u> : Background Level Development Feasibility Study 3.5.2 – <u>Appendix Da</u> : <u>Appendix P</u> : Comprehensive Benthic Approach 3.5.3 – <u>Appendix C</u> : <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis	
3.6 RG Sensitivities and Uncertainties 3.6.1 Ecological RGs 3.6.2 Human Health RGs 3.6.3 Background RGs 3.6.4 Application to Draft FS 3.6.5 Measurement Uncertainty	3.6 – <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis 3.6.4 – <u>Appendix E</u>	-- Not applicable (not used)
3.7 Conclusion		2.5 Section 2 Summary
4. Remedial Action Levels (RALs) Development	4. - <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis	3.1 Focused COCs 3.2 RALs
4.1 RALs and FS Approach	4.1 – <u>Appendix Ha</u> : Fate and Transport Modeling <u>Appendix Q</u> : EPA Comments on the Draft FS Process, LWG Responses, and Resolutions	3.1 Focused COCs 3.2 RALs
4.2 RAL Development Methods	4.2 – <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis; <u>Appendix Ha</u> : Fate and Transport Modeling	3.1 Focused COCs 3.2 RALs
4.3 RAL Range Selection and Detailed Methods by COC	4.3.1 – <u>Appendix Ib</u> : Evaluation of Dredge Residuals Management;	3.2 RALs

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4.3.1 Total PCB RALs 4.3.2 BaPEq RALs 4.3.3 Sum-DDE RALs 4.3.4 Sum-DDD and Sum-DDT RALs 4.3.5 2,3,4,7,8-PCDF RALs 4.3.6 Potentially Unacceptable Benthic Risks	<u>Appendix Ha</u> : Fate and Transport Modeling <u>Appendix Db</u> : Supporting RAL Tables and Figures; <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis 4.3.2 – <u>Appendix Db</u> ; <u>Appendix E</u> 4.3.3 – <u>Appendix Db</u> 4.3.4 – <u>Appendix Db</u> ; <u>Appendix E</u> 4.3.5 – <u>Appendix Db</u> ; <u>Appendix E</u> 4.3.6 – <u>Appendix P</u> : Comprehensive Benthic Approach; <u>Appendix E</u> ; <u>Appendix T</u> : Long-Term Monitoring and Contingency Program Outline	
4.4 Summary of Selected RALs for the Draft FS	4.4 - <u>Appendix Db</u> : Supporting RAL Tables and Figures; <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis	3.2 RALs
4.5 RAL Development Uncertainties for PCBs and BaPEq	4.5 - <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis; <u>Appendix Ha</u> : Fate and Transport Modeling; <u>Appendix Ib</u> : Evaluation of Dredge Residuals Management	-- Not applicable (not used)
4.6 RALs Conclusions		3.2 RALs
5. Area of Potential Concern and Sediment Management Area Development		3.3 SDUs 3.4 SMAs
5.1 History of Areas of Potential Concern		-- Not applicable (not used)
5.2 Overall Development of Sediment Management Areas		3.3 SDUs 3.4 SMAs
5.3 SMA Mapping Methods	5.3 - <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity	3.4 SMAs
5.3.1 Comprehensive Benthic Risk		3.4.1 SMA Identification Process

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Area Mapping 5.3.2 Refinement of AOPC Boundaries 5.3.3 Low Data Density and Natural Neighbor Refinements	Analysis 5.3.1 - <u>Appendix P</u> : Comprehensive Benthic Approach	
5.4 Development of SubSMAs Based on Site Use/ Physical Features 5.4.1 Site Use SubSMA Types 5.4.2 Physical Feature SubSMA Types 5.4.3 Other Considerations for SubSMAs	5.4.3 - <u>Appendix Hc</u> : Capping Effectiveness and Stability Modeling Draft	3.4 SMAs 3.4.1 SMA Identification Process
5.5 Evaluation of Potential Oregon Hot Spots, Principal Threat Material (PTM) and Hazardous Waste 5.5.1 Potential Oregon Hot Spots 5.5.2 Principal Threat Material (PTM) Areas 5.5.3 Hazardous Waste	5.5.1 - <u>Appendix Hc</u> : Capping Effectiveness and Stability Modeling Draft 5.5.2 - <u>Appendix Hc</u>	3.5.1 Identification of PTW (Principal Threat Waste)
5.6 Evaluation of Buried Contamination 5.6.1 Erosion Due to River Currents 5.6.2 Erosion Due to Propwash 5.6.3 Wind/Wake Generated Wave Erosion 5.6.4 Potential Future Maintenance Dredge Areas Outside of Navigation Channel 5.6.5 Maintenance Dredging in the Navigation Channel 5.6.6 Evaluation of Subsurface Concentrations Left in Place Outside of Alternative	5.6.1 - <u>Appendix La</u> : Sediment Transport Modeling; <u>Appendix Ha</u> : Fate and Transport Modeling 5.6.2 - <u>Appendix Fb</u> : Evaluation of Propwash Disturbance Depths; <u>Appendix Ha</u> 5.6.3 - <u>Appendix Hc</u> : Capping Effectiveness and Stability Modeling Draft 5.6.4 - <u>Appendix Fa</u> : Contents of the Site-Wide AOPC and Evaluation of Buried Contamination in Navigation Channel and Future Maintenance Dredge Areas 5.6.5 - <u>Appendix Fa</u>	3.5.4 Assignment of Technologies to SMAs Appendix: Evaluation of Propwash Disturbance Depths

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Footprints	5.6.6 – <u>Appendix Fa</u>	
5.7 Analysis of TZW Impacts in and near SMAs 5.7.1 Aquatic Life Potential ARARs 5.7.2 Fish/Shellfish Consumption Potential ARARs 5.7.3 Drinking Water Potential ARARs	5.7.3 – <u>Appendix Q</u> : EPA Comments on the Draft FS Process, LWG Responses, and Resolutions	3.5.3 Groundwater Discharge Rates 2.2.3 ARARs
5.8 Summary of SMAs and SubSMAs		3.4 SMAs 3.4.1 SMA Identification Process
5.9 Contaminants Addressed by SMAs and Site-wide AOPC Characterization 5.9.1 Relationship Between SMAs and Site-wide AOPC 5.9.2 Contaminants Addressed by SMAs	5.9 – <u>Appendix Fa</u> : Contents of the Site-Wide AOPC and Evaluation of Buried Contamination in Navigation Channel and Future Maintenance Dredge Areas 5.9.1 – <u>Appendix Da</u> : Remediation Goal Development 5.9.2 – <u>Appendix Fa</u> : <u>Appendix Ha</u> : Fate and Transport Modeling	3.3 SDUs 3.4 SMAs
5.10 Determination of SMA Volumes 5.10.1 Depth of Impact 5.10.2 Methods of Calculating SMA Volumes	5.10.1 – <u>Appendix G</u> : Volume Determination; <u>Appendix Q</u> : EPA Comments on the Draft FS Process, LWG Responses, and Resolutions; <u>Appendix A</u> : Background Level Development Feasibility Study 5.10.2 – <u>Appendix G</u> ; <u>Appendix Q</u>	3.4 SMAs 3.4.2 Areas and Volume of Contamination
5.11 SMA Sensitivities and Uncertainties 5.11.1 Area Sensitivities and Uncertainties 5.11.2 Volume Sensitivity Analysis	5.11 – <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis 5.11.1 – <u>Appendix E</u>	-- Not applicable (not used)
5.12 Conclusions		-- Excess (not used)
6. Identification and Screening of Remedial Technologies		2. Identification and Screening of Technologies

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6.1 Identification of Technologies	6.1 – <u>Appendix Ha</u> : Fate and Transport Modeling; <u>Appendix Q</u> : EPA Comments on the Draft FS Process, LWG Responses, and Resolutions	2.3 General Response Actions
6.2 Screening of Remedial Technologies	6.2 – <u>Appendix Q</u> : EPA Comments on the Draft FS Process, LWG Responses, and Resolutions	2.4 Identification and Screening of Technology Types and Process Options
6.2.1 Institutional Controls Screening	6.2.2 – <u>Appendix T</u> : Long-Term Monitoring and Contingency Program Outline;	2.4.1 Identification and Screening of Technologies
6.2.2 Monitored Natural Recovery (MNR) Screening	<u>Appendix Q</u> : Source Control Inventory Tables;	
6.2.3 Enhanced Monitored Natural Recovery (EMNR) Screening	<u>Appendix Ha</u> : Fate and Transport Modeling;	
6.2.4 In Situ Treatment	<u>Appendix La</u> : Sediment Transport Modeling;	
6.2.5 Engineered Capping Screening	<u>Appendix U</u> : Additional Analysis to Support Comparative Evaluation of Alternatives;	
6.2.6 Active Capping Screening	<u>Appendix Fb</u> : Evaluation of Propwash Disturbance Depths;	
6.2.7 Removal Screening	<u>Appendix Hc</u> : Capping Effectiveness and Stability Modeling Draft	
6.2.8 Ex Situ Treatment Screening	6.2.3 – <u>Appendix O</u>	
6.2.9 Disposal Screening	6.2.4 – <u>Appendix O</u> ;	
	<u>Appendix K</u> : Cost Estimates	
	6.2.5 – <u>Appendix Hc</u> ;	
	<u>Appendix M</u> : Preliminary Draft Clean Water Act Section 404(B)(1) Evaluation;	
	<u>Appendix C</u> : Water Screening Against Potential ARARs and Selection of Indicator Chemicals for Draft FS Evaluation;	
	<u>Appendix O</u> ; <u>Appendix K</u>	
	6.2.6 – <u>Appendix C</u> ; <u>Appendix Hc</u> ; <u>Appendix K</u>	
	6.2.7 – <u>Appendix Ib</u> : Evaluation of Dredge Residuals Management;	
	<u>Appendix K</u> ; <u>Appendix O</u> ;	

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	<u>Appendix Ia</u> : Dredging Water Quality Evaluation 6.2.8 – <u>Appendix O</u> ; <u>Appendix S</u> : Treatment Technology Screening Evaluation 6.2.9 – <u>Appendix O</u> ; <u>Appendix Ja</u> : Description of Disposal Options; <u>Appendix Jc</u> : Seismic Assessment of CDF Designs; <u>Appendix Jb</u> : Evaluation of Potential Water Quality Impacts from In-Water Disposal Alternatives; <u>Appendix M</u>	
6.3 Summary Results of Technology Screening and Conclusions 6.3.1 Summary Results of Technology Screening 6.3.2 Conclusions	6.3.1 – <u>Appendix O</u> : EPA Comments on the Draft FS Process, LWG Responses, and Resolutions	2.4.1 Identification and Screening of Technologies
7. Development of Comprehensive Alternatives	7. - <u>Appendix O</u> : EPA Comments on the Draft FS Process, LWG Responses, and Resolutions	3.5 Remedial Technology Assignment 3.5.1 Assignment of Technologies to SMAs 3.6 Development of Alternatives
7.1 Screening the Alternatives	7.1 – <u>Appendix U</u> : Additional Analysis to Support Comparative Evaluation of Alternatives; <u>Appendix Fa</u> : Contents of the Site-Wide AOPC and Evaluation of Buried Contamination in Navigation Channel and Future Maintenance Dredge Areas	3.7 Screening of Alternatives

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7.2 Remedial Technology Options for Alternatives		3.5 Remedial Technology Assignment 3.5.1 Assignment of Technologies to SMAs
7.3 Technology Assignment Assumptions 7.3.1 Institutional Controls 7.3.2 MNR 7.3.3 EMNR 7.3.4 In Situ Treatment 7.3.5 Engineered Capping 7.3.6 Active Capping 7.3.7 Removal 7.3.8 Disposal 7.3.9 Ex-Situ Treatment 7.3.10 Long Term Monitoring	7.3 – <u>Appendix K</u> : Cost Estimates 7.3.1 – <u>Appendix T</u> : Long-Term Monitoring and Contingency Program Outline; <u>Appendix K</u> 7.3.4 – <u>Appendix K</u> 7.3.5 – <u>Appendix Hc</u> : Capping Effectiveness and Stability Modeling Draft; <u>Appendix K</u> 7.3.6 – <u>Appendix K</u> 7.3.7 – <u>Appendix K</u> ; <u>Appendix Ib</u> : Evaluation of Dredge Residuals Management 7.3.10 – <u>Appendix T</u> ; <u>Appendix K</u>	3.5 Remedial Technology Assignment 3.5.1 Assignment of Technologies to SMAs Appendix: Comprehensive Benthic Approach
7.4 Assignment of Example Disposal Options to Alternatives		3.5.2 Sediment Disposal and Management Appendix: Description of Disposal Options Appendix: Seismic Assessment of CDF Designs
7.5 Construction Sequencing and Durations	7.5 – <u>Appendix K</u> : Cost Estimates	4. Detailed Analysis of Alternatives 4.2.1.2.6 Implementability
7.6 Comprehensive Alternative Cost Estimates	7.6 – <u>Appendix K</u> : Cost Estimates; <u>Appendix O</u> : EPA Comments on the Draft FS Process, LWG Responses, and Resolutions	Screening Levels Costs 3.7 Screening of Alternatives 3.7.1 Introduction Appendix: Cost Estimates Detailed Evaluation Costs 4. Detailed Analysis of Alternatives 4.2.1.2.7 Cost Appendix: Focused Cost Estimate
7.7 Conclusions		Screening Level Conclusions 3.7.9 Summary

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8. Detailed Analysis of Comprehensive Alternatives		4. Detailed Analysis of Alternatives
8.1 Overview of NCP Evaluation Criteria		4. Detailed Analysis of Alternatives 4.1 Introduction
8.2 Methodologies to Evaluate NCP Criteria and Common Elements of the Evaluation	8.2.1 – <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis;	4. Detailed Analysis of Alternatives 4.1 Introduction
8.2.1 Evaluation General Approach	<u>Appendix C</u> : Water Screening Against Potential ARARs and Selection of Indicator Chemicals for Draft FS Evaluation;	4.1.1 Evaluation Methods
8.2.2 Overall Protection of Human Health and the Environment	<u>Appendix U</u> : Additional Analysis to Support Comparative Evaluation of Alternatives	4.1.1.1 Areas/Volumes of Active Remediation
8.2.3 Compliance with ARARs	8.2.2 – <u>Appendix E</u> ; <u>Appendix U</u> ;	4.1.1.2 Capping Models
8.2.4 Long-Term Effectiveness and Permanence	<u>Appendix Hb</u> : Documentation for the Dynamic Bioaccumulation Model Draft;	4.1.1.3 Dredging Models
8.2.5 Reduction of Toxicity, Mobility, or Volume through Treatment	<u>Appendix Ib</u> : Evaluation of Dredge Residuals Management	4.1.1.4 Time to Protectiveness
8.2.6 Short-Term Effectiveness	8.2.3 – <u>Appendix M</u> : Preliminary Draft Clean Water Act Section 404(B)(1) Evaluation;	Appendix: Capping Effectiveness and Stability
8.2.7 Implementability	<u>Appendix Lb</u> : HEC-RAS Hydrodynamic Model; <u>Appendix U</u>	Appendix: Dredging Water Quality Evaluation
8.2.8 Cost	8.2.4 – <u>Appendix E</u> ;	Appendix: Evaluation of Dredge Residuals Management
	<u>Appendix Ha</u> : Fate and Transport Modeling; <u>Appendix C</u> ; <u>Appendix M</u> ;	
	<u>Appendix Hc</u> : Capping Effectiveness and Stability Modeling Draft;	
	<u>Appendix O</u> : EPA Comments on the Draft FS Process, LWG Responses, and Resolutions;	
	<u>Appendix Ib</u> : Evaluation of Potential Water Quality Impacts from In-Water Disposal Alternatives;	
	<u>Appendix U</u> ; <u>Appendix M</u>	

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	8.2.6 – <u>Appendix Ic</u> : Air Pollutant and Greenhouse Gas Emissions Inventory; <u>Appendix K</u> : Cost Estimates; <u>Appendix O</u> ; <u>Appendix Jb</u> 8.2.8 – <u>Appendix K</u>	
8.3 Alternative A Detailed Analysis – No Action 8.3.1 Overall Protection of Human Health and the Environment 8.3.2 Compliance with ARARs 8.3.3 Long-Term Effectiveness and Permanence 8.3.4 Reduction of Toxicity, Mobility, and Volume through Treatment 8.3.5 Short-Term Effectiveness 8.3.6 Implementability 8.3.7 Cost	8.3.3 – <u>Appendix U</u> : Additional Analysis to Support Comparative Evaluation of Alternatives; <u>Appendix Ha</u> : Fate and Transport Modeling; <u>Appendix Hb</u> : Documentation for the Dynamic Bioaccumulation Model Draft	4. Detailed Analysis of Alternatives 4.2 Individual Analysis of Alternatives 4.2.1 Alternative 1 4.2.1.1 Description 4.2.1.2 Assessment
8.4 Alternative B Detailed Analysis 8.4.1 Overall Protection of Human Health and the Environment 8.4.2 Compliance with ARARs 8.4.3 Long-Term Effectiveness and Permanence 8.4.4 Reduction of Toxicity, Mobility, and Volume through Treatment 8.4.5 Short-Term Effectiveness 8.4.6 Implementability 8.4.7 Cost	8.4.1 – <u>Appendix U</u> : Additional Analysis to Support Comparative Evaluation of Alternatives; <u>Appendix Ha</u> : Fate and Transport Modeling; <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis 8.4.2 – <u>Appendix M</u> : Preliminary Draft Clean Water Act Section 404(B)(1) Evaluation 8.4.3 – <u>Appendix U</u> ; <u>Appendix Ha</u> ; <u>Appendix E</u> ; <u>Appendix O</u> 8.4.5 – <u>Appendix Ic</u> : Air Pollutant and Greenhouse Gas Emissions Inventory; <u>Appendix U</u>	4. Detailed Analysis of Alternatives 4.2 Individual Analysis of Alternatives 4.2.2 Alternative 2 4.2.2.1 Description 4.2.2.2 Assessment

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8.5 Alternative C Detailed Analysis 8.5.1 Overall Protection of Human Health and the Environment 8.5.2 Compliance with ARARs 8.5.3 Long-Term Effectiveness and Permanence 8.5.4 Reduction of Toxicity, Mobility, and Volume through Treatment 8.5.5 Short-Term Effectiveness 8.5.6 Implementability 8.5.7 Cost	8.5.1 – <u>Appendix U</u> : Additional Analysis to Support Comparative Evaluation of Alternatives; <u>Appendix Ha</u> : Fate and Transport Modeling; <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis 8.5.2 – <u>Appendix M</u> : Preliminary Draft Clean Water Act Section 404(B)(1) Evaluation 8.5.3 – <u>Appendix U</u> ; <u>Appendix Ha</u> ; <u>Appendix E</u> ; <u>Appendix Q</u> : EPA Comments on the Draft FS Process, LWG Responses, and Resolutions 8.5.5 – <u>Appendix Ic</u> : Air Pollutant and Greenhouse Gas Emissions Inventory; <u>Appendix U</u>	4. Detailed Analysis of Alternatives 4.2 Individual Analysis of Alternatives 4.2.3 Alternative 3 4.2.3.1 Description 4.2.3.2 Assessment
8.6 Alternative D Detailed Analysis 8.6.1 Overall Protection of Human Health and the Environment 8.6.2 Compliance with ARARs 8.6.3 Long-Term Effectiveness and Permanence 8.6.4 Reduction of Toxicity, Mobility, and Volume through Treatment 8.6.5 Short-Term Effectiveness 8.6.6 Implementability 8.6.7 Cost	8.6.1 – <u>Appendix U</u> : Additional Analysis to Support Comparative Evaluation of Alternatives; <u>Appendix Ha</u> : Fate and Transport Modeling; <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis 8.6.2 – <u>Appendix M</u> : Preliminary Draft Clean Water Act Section 404(B)(1) Evaluation 8.6.3 – <u>Appendix U</u> ; <u>Appendix Ha</u> ; <u>Appendix E</u> ; <u>Appendix Q</u> : EPA Comments on the Draft FS Process, LWG Responses, and Resolutions 8.6.5 – <u>Appendix Ic</u> : Air Pollutant and Greenhouse Gas Emissions Inventory; <u>Appendix U</u>	4. Detailed Analysis of Alternatives 4.2 Individual Analysis of Alternatives 4.2.3 Alternative 4 4.2.3.1 Description 4.2.3.2 Assessment
8.7 Alternative E Detailed Analysis 8.7.1 Overall Protection of Human	8.7.1 – <u>Appendix U</u> : Additional Analysis to Support Comparative Evaluation of	Dependent on number of alternatives retained for detailed analysis.

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Health and the Environment 8.7.2 Compliance with ARARs 8.7.3 Long-Term Effectiveness and Permanence 8.7.4 Reduction of Toxicity, Mobility, and Volume through Treatment 8.7.5 Short-Term Effectiveness 8.7.6 Implementability 8.7.7 Cost	Alternatives; <u>Appendix Ha</u> : Fate and Transport Modeling; <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis 8.7.2 - <u>Appendix M</u> : Preliminary Draft Clean Water Act Section 404(B)(1) Evaluation 8.7.3 – <u>Appendix U</u> ; <u>Appendix Ha</u> ; <u>Appendix E</u> ; <u>Appendix O</u> : EPA Comments on the Draft FS Process, LWG Responses, and Resolutions 8.7.5 – <u>Appendix Ic</u> : Air Pollutant and Greenhouse Gas Emissions Inventory; <u>Appendix U</u>	
8.8 Alternative F Detailed Analysis 8.8.1 Overall Protection of Human Health and the Environment 8.8.2 Compliance with ARARs 8.8.3 Long-Term Effectiveness and Permanence 8.8.4 Reduction of Toxicity, Mobility, and Volume through Treatment 8.8.5 Short-Term Effectiveness 8.8.6 Implementability 8.8.7 Cost	8.8.1 – <u>Appendix U</u> : Additional Analysis to Support Comparative Evaluation of Alternatives; <u>Appendix Ha</u> : Fate and Transport Modeling; <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis 8.8.2 - <u>Appendix M</u> : Preliminary Draft Clean Water Act Section 404(B)(1) Evaluation 8.8.3 – <u>Appendix U</u> ; <u>Appendix Ha</u> ; <u>Appendix E</u> ; <u>Appendix O</u> : EPA Comments on the Draft FS Process, LWG Responses, and Resolutions 8.8.5 – <u>Appendix Ic</u> : Air Pollutant and Greenhouse Gas Emissions Inventory; <u>Appendix U</u>	Dependent on number of alternatives retained for detailed analysis.
8.9 Conclusions		-- Excess (not used)
9. Comparative Analysis of Alternatives		4. Detailed Analysis of Alternatives 4.3 Comparative Analysis Appendix: Additional Analysis to Support Comparative

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LWG FS Outline	Associated LWG Appendix	EPA FS Outline
		Analysis of Alternatives
9.1 Overall Protection of Human Health and the Environment 9.1.1 Surface Sediment RAOs 9.1.2 Tissue RAOs 9.1.3 Surface Water RAOs 9.1.4 Groundwater RAOs 9.1.5 Summary of Comparative Evaluation Relative to RAOs	9.1.1 - <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis; <u>Appendix U</u> : Additional Analysis to Support Comparative Evaluation of Alternatives; <u>Appendix Ha</u> : Fate and Transport Modeling	4.3.1 Overall Protection of Human Health and the Environment
9.2 Compliance with ARARs 9.2.1 Chemical-Specific ARARs 9.2.2 Location- and Action-Specific ARARs	9.2.1 - <u>Appendix U</u> : Additional Analysis to Support Comparative Evaluation of Alternatives; <u>Appendix Ha</u> : Fate and Transport Modeling; <u>Appendix C</u> : Water Screening Against Potential ARARs and Selection of Indicator Chemicals for Draft FS Evaluation; <u>Appendix Ia</u> : Dredging Water Quality Evaluation 9.2.2 - <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis; <u>Appendix U</u> ; <u>Appendix M</u> : Preliminary Draft Clean Water Act Section 404(B)(1) Evaluation; <u>Appendix Lb</u> : HEC-RAS Hydrodynamic Model	4.3.2 Compliance with ARARs Appendix: Clean Water Act Section 404(B)(1) Evaluation Appendix: Biological Assessment
9.3 Long-Term Effectiveness and Permanence 9.3.1 Magnitude of Residual Risk – Long-Term Surface Sediment COC Concentrations 9.3.2 Magnitude of Residual Risk – Long-Term Biota Tissue	9.3.1 - <u>Appendix U</u> : Additional Analysis to Support Comparative Evaluation of Alternatives; <u>Appendix Ha</u> : Fate and Transport Modeling; <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis 9.3.2 – <u>Appendix Hb</u> : Documentation for the	4.3.3 Long-Term Effectiveness and Permanence 4.3.3.1 Magnitude of Residual Risk 4.3.3.2 Adequacy and Reliability of Controls Appendix: Long-Term Monitoring

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<p>Concentrations</p> <p>9.3.3 Magnitude of Residual Risk – Long-Term Surface Water Contaminant Concentrations</p> <p>9.3.4 Magnitude of Residual Risk – Minimization of Potential Long-Term Sediment Recontamination</p> <p>9.3.5 Magnitude of Residual Risk – Minimization of Potential Groundwater Impacts</p> <p>9.3.6 Magnitude of Residual Risk – Minimization of Potential Downstream Transport</p> <p>9.3.7 Adequacy of Controls</p> <p>9.3.8 Other Factors – Habitat Restoration Potential Integration</p> <p>9.3.9 Disposal Site Long-Term Effectiveness</p>	<p>Dynamic Bioaccumulation Model Draft; <u>Appendix Ha</u></p> <p>9.3.3 – <u>Appendix U</u></p> <p>9.3.4 – <u>Appendix U</u></p> <p>9.3.5 – <u>Appendix Ha</u>; <u>Appendix C</u>: Water Screening Against Potential ARARs and Selection of Indicator Chemicals for Draft FS Evaluation; <u>Appendix Hc</u> - Capping Effectiveness and Stability Modeling Draft; <u>Appendix U</u>;</p> <p><u>Appendix O</u>: EPA Comments on the Draft FS Process, LWG Responses, and Resolutions</p> <p>9.3.6 – <u>Appendix U</u></p> <p>9.3.7 – <u>Appendix T</u>: Long-Term Monitoring and Contingency Program Outline; <u>Appendix Hc</u></p> <p>9.3.9 – <u>Appendix O</u>; <u>Appendix U</u>; <u>Appendix Jb</u>: Evaluation of Potential Water Quality Impacts from In-Water Disposal Alternatives; <u>Appendix K</u>: Cost Estimates; <u>Appendix Jc</u>: Seismic Assessment of CDF Designs; <u>Appendix Hc</u></p>	
<p>9.4 Reduction of Toxicity, Mobility, and Volume through Treatment</p>		<p>4.3.4 Reduction of Toxicity, Mobility, and Volume through Treatment</p>

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LWG FS Outline	Associated LWG Appendix	EPA FS Outline
9.5 Short-Term Effectiveness 9.5.1 Environmental Impacts – Water Quality During Construction 9.5.2 Environmental Impacts – Sediment Recontamination During Construction 9.5.3 Environmental Impacts – Potential Downstream Transport During Construction 9.5.4 Environmental Impacts Air Pollutant and Greenhouse Gas Emissions 9.5.5 Time Until Protection Is Achieved – Time to Achieve RAOs 9.5.6 Community Risks and Quality of Life 9.5.7 Potential Impacts to Workers 9.5.8 Disposal Option Short-Term Effectiveness	9.5.1 - <u>Appendix Ha</u> : Fate and Transport Modeling; <u>Appendix Ia</u> : Dredging Water Quality Evaluation; <u>Appendix U</u> : Additional Analysis to Support Comparative Evaluation of Alternatives 9.5.2 – <u>Appendix U</u> ; <u>Appendix T</u> : Long-Term Monitoring and Contingency Program Outline 9.5.3 – <u>Appendix U</u> 9.5.4 – <u>Appendix Ic</u> : Air Pollutant and Greenhouse Gas Emissions Inventory 9.5.5 – <u>Appendix Ha</u> ; <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis 9.5.6 – <u>Appendix U</u> 9.5.8 – <u>Appendix Q</u> : EPA Comments on the Draft FS Process, LWG Responses, and Resolutions; <u>Appendix U</u> ; <u>Appendix Jb</u> : Evaluation of Potential Water Quality Impacts from In-Water Disposal Alternatives	4.3.5 Short-Term Effectiveness 4.3.5.1 Protection of Community During Remedial Actions 4.3.5.2 Protection of Workers During Remedial Actions 4.3.5.3 Environmental Impacts 4.3.5.4 Time Until Remedial Action Objectives are Achieved
9.6 Implementability 9.6.1 Technical Feasibility 9.6.2 Administrative Feasibility 9.6.3 Availability of Services and Materials 9.6.4 Disposal Site Implementability	9.6.1 – <u>Appendix T</u> : Long-Term Monitoring and Contingency Program Outline 9.6.2 – <u>Appendix M</u> : Preliminary Draft Clean Water Act Section 404(B)(1) Evaluation 9.6.4 – <u>Appendix U</u> : Additional Analysis to Support Comparative Evaluation of Alternatives	4.3.6 Implementability 4.3.6.1 Technical Feasibility 4.3.6.2 Administrative Feasibility 4.3.6.3 Availability of Services and Materials 4.3.6.4 Disposal Site Availability
9.7 Cost	9.7 – <u>Appendix K</u> : Cost Estimates; <u>Appendix M</u> : Preliminary Draft Clean Water	4.3.7 Cost 4.3.7.1 Capital Costs

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LWG FS Outline	Associated LWG Appendix	EPA FS Outline
	Act Section 404(B)(1) Evaluation	4.3.7.2 Operation and Maintenance Costs 4.3.7.3 Present Worth Cost
9.8 Conclusions		4.4 Summary
10. Conclusions		-- Excess (not used)
10.1 Risk Management Principles and National Guidance	10.1 - <u>Appendix T</u> : Long-Term Monitoring and Contingency Program Outline	-- Excess (not used)
10.2 Risk Management Decisions and Uncertainties	10.2 - <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis; <u>Appendix U</u> : Additional Analysis to Support Comparative Evaluation of Alternatives; <u>Appendix Ha</u> : Fate and Transport Modeling	-- Excess (not used)
10.3 Summary of Comparative Analysis of Alternatives 10.3.1 Overall Protection of Human Health and the Environment 10.3.2 Compliance with ARARs 10.3.3 Long-Term Effectiveness and Permanence 10.3.4 Reductions in Mobility, Toxicity, or Volume through Treatment 10.3.5 Short-Term Effectiveness 10.3.6 Implementability 10.3.7 Cost 10.3.8 Cost-Effectiveness 10.3.9 Conclusions of the Comparative Analysis of Alternatives	10.3 - <u>Appendix U</u> : Additional Analysis to Support Comparative Evaluation of Alternatives 10.3.1 - <u>Appendix E</u> : Remediation Goal and Sediment Management Area Sensitivity Analysis 10.3.6 – <u>Appendix U</u> 10.3.8 – <u>Appendix U</u> 10.3.9 – <u>Appendix U</u>	-- Excess (not used)
11. References		Bibliography